REMARKS

System claims 15 to 22 and 30 are pending. Applicants have amended claim 15 to add more specific features of the claimed system. The language added to claim 15 is supported in the original application as filed, e.g., at page 14, lines 19-32, and thus adds no new matter. Applicants have also cancelled claims 23 to 29 without prejudice to pursuing the subject matter of these claims in a continuation application. New claim 30 is supported in the application, e.g., at page 14, lines 8-10, and thus adds no new matter.

Applicants respectfully request that the Examiner consider their IDS and form PTO-1449 filed on July 7, 2002, initial and date the form, and return a copy to applicants' representative.

Furthermore, applicants again request that the Examiner correct the record marred by errors made in the First Office Action as requested in applicants' previous response dated June 5, 2003.

35 U.S.C. § 102

Claims 15, 16, 20-24, and 26-29 have been rejected as allegedly anticipated by various patents including Dell et al. (U.S. Pat. No. 3,643,491), Kimura et al. (U.S. Pat. No. 6,331,074 B1), Sheffield (U.S. Pat. No. 5,356,217 A), Vasilenko et al. (U.S. Pat. No. 4,317,360), Nakamura (U.S. Pat. No. 6,210,035 B1), Webster et al. (U.S. Pat. No. 5,300,888 A), Lyon et al. (U.S. Pat. No. 5,981,290 A), Nakamura et al. (U.S. Pat. No. 5,862,983 A), Fawcett et al., (U.S. Pat. No. 4,821,303), and Reading et al. (U.S. Pat. No. 5,346,306 A).

The Examiner explains that in making these rejections he gave no patentable weight to any methods of use or process limitations for these system claims. Applicants respectfully submit that the Examiner reconsider the claims as amended, which recite that the system includes an analyzer that includes a processor and software, wherein the software causes the processor to analyze the heat flow measured by the thermal measuring apparatus and to identify the presence or absence of a strong exothermal peak, wherein the presence of a strong exothermal peak indicates the presence of the energetic material in the sample and the absence of a strong exothermal peak indicates the absence of any energetic material in the sample. The

system can further include an alarm or display activated by the analyzer when a strong exothermal peak is identified to signal the presence of an energetic material.

Applicants submit that none of the cited patents describes a system that includes a processor and software that causes the processor to analyze the heat flow measured by a thermal measuring apparatus and to identify the presence or absence of a strong exothermal peak. Thus, none of the cited patents can anticipate claim 15, or any of the claims that depend from claim 15.

Applicants will discuss each of the cited references in the order cited in the Office Action. First, Dell describes a derivative differential scanning microcalorimeter that is said to address the problem of distortion caused by, e.g., a lagging phase shift. However, Dell fails to describe the use of the microcalorimeter to detect energetic materials. Nowhere does Dell describe that his system includes software that causes a processor to analyze heat flow measured by a thermal measuring apparatus and to identify the presence or absence of a strong exothermal peak.

Kimura discloses a thermal analyzer using a thin-film heater, but does not describe the use of software that causes a processor to identify the presence or absence of a strong exothermal peak. Instead, Kimura's microcomputer is used, e.g., to convert the rate of temperature increase to a constant temperature increase rate. Thus, any software in the microcomputer is different from applicants' claimed software.

Sheffield describes an enthalpimetric analyzer and method of use. This analyzer can be used to determine the concentration of an analyte, such as crystalline silica and other airborne health hazards, in a sample. Although Sheffield describes a microterminal 50, he does not describe software that causes the analyzer to identify strong exothermal peaks.

Vasilenko describes an apparatus for differential thermal analysis that uses millivoltmeters or potentiometer-type recorders as recording instruments. No processor or software of any kind is described.

Nakamura '035 discloses a high-speed thermal analyzer that includes a processor and a waveform analyzer that detects successive peaks of a differential thermogravimetric signal, and this information is used to calculate activation energy. Nowhere have applicants found any discussion in Nakamura '035 of software that causes an analyzer to identify strong exothermal peaks.

Webster describes a proton magnetic resonance thermal analyzer that applies a magnetic field and heat to a sample. Although Webster's device includes a CPU, it is used to control the device and to store nuclear resonant signals, not to identify any strong exothermal peaks. Thus, whatever software is used in Webster's device is different from the software in applicants' claimed system.

Lyon describes a microcalorimeter that uses rapid anaerobic pyrolysis and combustion in the presence of oxygen to measure the flammability parameters of samples. Computer 44 is used to analyze data from a thermogravimetric analyzer, a flow meter, and an oxygen analyzer. There is no indication that this computer identifies strong exothermal peaks.

Nakamura '983 discloses a thermomechanical analyzer having a thermogravimetric function. A "computing element 44" provides a value obtained by subtracting a load value registered in a load register from a load signal value sent from a storage instrument as a new load signal value to a recording device 45 such as a plotter, a printer or the like. There is no indication that this (or other) computing element identifies a strong exothermal peak.

Fawcett describes a combined thermal analyzer and X-ray diffractometer that correlates X-ray diffraction and thermal data taken simultaneously to identify structural changes in samples. Computer 108 controls the temperature and power amplifier. Recorders are linked to a plotter to produce a chart in which variations in differential power are shown as a function of temperature.

The Office Action again rejects the claims as allegedly anticipated by Reading et al. As noted in their prior response, applicants respectfully disagree for the following reasons. First, Reading does not describe a system for detecting the presence of an energetic material in a sample in which the presence of the energetic material is unknown. The terms "energetic" and "explosive" are not present in the Reading patent, and this patent does not describe a system for detecting such materials.

Second, the Reading patent does not describe an apparatus or system that includes an analyzer (with processor and software) that determines the presence or absence of a strong exothermal peak, wherein the presence of a strong exothermal peak indicates the presence of the energetic material in the sample, and the absence of a strong exothermal peak indicates the absence of any energetic material in the sample.

Although the Reading patent describes the use of modulated DSC to analyze samples, such as polymers like poly(ethylene terephthalate) (PET), there is simply no discussion of a device for detecting energetic, e.g., explosive, materials. Reading merely analyzes heat flow without determining strong exothermal peaks. The Reading device is not programmed to detect strong exothermal peaks. This is an important distinction, because certain materials, like PET, may exhibit small exothermic peaks during DSC when they recrystallize, but as described in the patent application, small exothermic peaks that are caused by phase or physical changes do not indicate the presence of an energetic material (see, e.g., page 11, lines 9-33). The difference between the exothermal peak of PET and that of, for example, urea nitrate, can be seen in the figures. In the Reading patent, the DSC scans in FIG. 2a indicates heat flow of PET in milliwatts. In stark contrast, the DSC thermogram of urea nitrate in the present application, e.g., in FIG. 10, shows heat flow in Watts per gram.

The exothermal peaks can also be measured in Joules per gram, as indicated in Table 1 on page 26 of the present application. As Table 1 shows, most of the energetic materials have an exothermal peak of at least about 2000 Joules/gram, and even the least energetic material measured produced an exothermal peak of 447 Joules/gram. This level of energy release is far greater than the exothermal peak generated by a polymer like PET recrystallizing, which produces less than about 40 Joules/gram. As taught in the present patent application, only strong exothermal peaks indicate the presence of an energetic, e.g., explosive, material, and the Reading patent fails to describe or even suggest this concept. Thus, it is not possible for the Reading device to determine such strong exothermal peaks.

As a result, claim 15, and its dependent claims, are not anticipated by the Reading patent, and this rejection should be withdrawn.

35 U.S.C. §103

Second, the examiner has rejected claims 15-17 and 19-29 as allegedly obvious over Drew et al. (U.S. Pat. No. 5,313,061 A) in view of Reading et al. (U.S. Pat. No. 5,346,306 A) or

Fawcett et al. (U.S. Pat. No. 4,821,303), and claim 18 as being allegedly unpatentable over Drew et al. in view of Reading or Fawcett and further in view of Volsy (U.S. Pat. No. 3,827,217).

First, the Office Action asserts that the mass spectrometry system described in Drew can somehow be used together with the DSC system of Reading (at page 8 of the Office Action). Applicants respectfully submit that they do not quite understand this rejection. It is not clear what parts of the respective references are being combined to supposedly arrive at the invention of independent claim 15. In particular, if one were to combine the differential scanning calorimetry system of Reading with the mass spectrometer system of Drew, one would still not have the claimed invention, and the Office Action does not clearly state how the combination provides the claimed invention. By incorporating Reading's DSC system into Drew's mass spectrometer system, one would have essentially replaced one device with another, and applicants do not understand how this provides the claimed invention.

With respect to dependent claims 16, 17, and 19 to 22, applicants submit that these claims are allowable for at leas the same reasons as claim 15. Claims 23 to 29 have been cancelled.

With respect to claim 18, the Office Action notes that neither Drew nor Reading describe or suggest the use of electrostatic precipitation to concentrate samples. Although the Office Action alleges that Drew's mass spectrometer system could operate with Volsy's electrostatic precipitator, there is no factual support for this conclusion. To the contrary, applicants believe that Drew's mass spectrometer requires a gaseous or liquid input, and solid samples must first be extracted in a liquid or gas carrier. Thus, no one of ordinary skill in this field would use an electrostatic precipitator with Drew's system, because a precipitator removes particles from a gaseous sample, whereas Drew's system requires that particles in a gas are concentrated, not removed.

Furthermore, even if Volsy's precipitator could be used with Reading's system, Volsy provides no software that could be used in Reading's system to cause a processor to identify strong exothermal peaks, and thus the alleged combination still does not provide the invention of claim 18.

For at least these reasons, claims 15-22 are patentable over the cited references, and these rejections in view of Reading, Drew, and/or Volsy should be withdrawn.

Next, the Office Action asserts that the mass spectrometry system described in Drew can somehow be used together with the thermal analysis system of Fawcett (at page 11 of the Office Action). Again, applicants respectfully submit that they do not quite understand this rejection. It is not clear what parts of the respective references are being combined to supposedly arrive at the invention of independent claim 15. In particular, if one were to combine the thermal analysis system of Reading with the mass spectrometer system of Drew, one would still not have the claimed invention, and the Office Action does not clearly state how the combination provides the claimed invention. By incorporating Fawcett's thermal analyzer into Drew's mass spectrometer system, one would have essentially replaced one device with another, and applicants do not understand how this provides the claimed invention.

With respect to claim 18, this claim is allowable for at least the same reasons that claim 15 is allowable. For at least these reasons, claims 15-22 are patentable over the cited references, and these rejections in view of Fawcett, Drew, and/or Volsy should be withdrawn.

CONCLUSION

All pending claims 15 to 22 and 30 are patentable, and applicants respectfully request a Notice of Allowance along with a copy of an initialed form PTO 1449, and an indication that claims 1 to 14 were inadvertently rejected in the first Office Action and that they would have been allowable as issued in the '918 patent over the prior art cited in the present Office Action had they been pending in this application.

Enclosed is a check for $55.00 for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050, referencing Attorney Docket No. 08688-040002.

Respectfully submitted,

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